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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/916,629	08/22/1997	CHAD A. COBBLEY	97-0098	3496

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EXAMINER

AFTERGUT, JEFF H

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/916,629

Applicant(s)

COBBLEY ET AL.

Examiner

Jeff H. Aftergut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 40-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 40-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12-29-03</u> . | 6) <input type="checkbox"/> Other: _____ |

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Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-20, 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krall in view of Chorbadjiev et al, the admitted prior art, either one of Loctite 410 or Loctite 416 and further taken with the state of the prior art as exemplified by at least one of Liang et al, Fogal et al, Farnworth, Davis, and German Patent 4107347 for the same reasons as expressed in paragraph 2 of paper no 33, the Office action mailed 9-24-03.
3. Claims 21, 22, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Japanese Patent 58-196,280 for the same reasons as expressed in paper no. 33 (the Office action dated 9-24-03) paragraph 3.

Response to Arguments

4. Applicant's arguments filed 12-29-03 have been fully considered but they are not persuasive.

The applicant argues essentially regarding claims 1-20 and 42-44 that: (1) the newly recited language relating to the use of the adhesive wherein the adhesive cured within the specified amount of time "without heating the chip or the leadframe", and; (2) the ordinary artisan when viewing the prior art as a whole would not have been led to join a chip to a leadframe with cyanoacrylate adhesives in the manner claimed. The arguments have not been found to be persuasive for the reasons expressed below.

To begin with, while the references to Krall, Chorbadjiev et al, the admitted prior art, and either one of the Loctite 410 or Loctite 416 did not expressly state that heating was avoided and

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did not take place during the bonding with cyanoacrylate adhesives, the references to the admitted prior art (the admission that cyanoacrylate adhesives were well known to cure in a quick time period, i.e. a matter of seconds), Chorbadjiev (who expressly stated that the curing took place at room temperature because heating might damage the components being bonded), and either one of Loctite 410 or Loctite 416 (who suggested quick cure times for the cyanoacrylate adhesives) all suggested short cure times when using cyanoacrylate adhesives. The reference to Chorbadjiev expressly suggested that those skilled in the art would have cured the cyanoacrylate adhesives at room temperature and that heating might damage the components being bonded. Those skilled in the art would have readily understood that cyanoacrylate adhesives (or in layman's terms, super glue) required no application of heat to cure in a short (almost instantaneous) manner. Those versed in the art, when considering the prior art and in particular the reference to Chorbadjiev would have recognized that the use of cyanoacrylate adhesives would have eliminated the need for heating the chip as well as the substrate as a function of the short cure times at room temperature and would have understood that these adhesives did not require heating of the chip or the substrate to bond the same together. Additionally, note that none of the references which suggest the use of cyanoacrylate adhesives to join the chip to the substrate suggested that the components would have been heated in the joining operation (and their silence to this fact is a suggestion that no heating would have been necessary in the processing). As one skilled in the art would have readily appreciated that super glue does not require the application of heat to set the adhesive in a fast manner, one skilled in the art (and in particular in light of the teachings of Chorbadjiev) would have readily appreciated

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that the adhesive was set without the application of heat in the operation of attaching the chip to the leadframe.

Regarding the applicant's second argument, it would appear that one skilled in the art, when viewing what the prior art would have suggested as a whole, would have been led to utilize a cyanoacrylate adhesive to join a chip to a leadframe in the manner claimed. More specifically, the reference to Krall suggested "in the manufacture of electronic microchips it has been suggested that MCA (methyl cyanoacrylate) may be a useful adhesive for joining contact leads to the chips", the reference to Chorbadjiev suggested the "adhesive compositions which electroconductive properties are finding increased application in the electronics industry for assembly of various electronic components." and "cyanoacrylate conductive adhesives, when compared to the traditional epoxy and acrylic based conductive adhesives have the following strong points: short setting time at room temperature and humidity without a catalyst; one component adhesives; strong bonding action towards various materials (metals, plastics, ceramics, etc); satisfactory electroconductivity of adhesive bond; easy to work with." Clearly, use of cyanoacrylate adhesives for bonding electronic components together like a chip to a leadframe would have been understood to have taken place with the use of conductive cyanoacrylate adhesives. Additionally, the references to Loctite 410 and 416 as well as the admitted prior art evidenced that those skilled in the art would have recognized that these types of cyanoacrylate adhesives would have cured within seconds of application at room temperature. Lastly, the references to with the state of the prior art as exemplified by at least one of Liang et al, Fogal et al, Farnworth, Davis, and German Patent 4107347 suggested that those skilled in the art of assembling electronic packages would have known that a chip was bonded to a leadframe

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with an adhesive material (as admitted by applicant's admitted prior art) and that "wire bonding" was a separate operation. When one referenced the joining of the chip to the lead in Krall, it becomes apparent that the ordinary artisan in light of the preponderance of the evidence as exemplified by with the state of the prior art as exemplified by at least one of Liang et al, Fogal et al, Farnworth, Davis, and German Patent 4107347 that one would have used the MCA of Krall to join the chip to the leadframe in the packaging operation. When one viewed the prior art as a whole, one would have been led to the proposed combination for the reasons given.

The applicant also addresses the rejection of claims 21, 22, 40 and 41, and argues that the reference to Japanese Patent 58-196280 does not join a chip to a leadframe with a quick curing adhesive and that the reference additionally doesn't suggest that the operation took place without heating the chip and the leadframe. The applicant is advised that as depicted in Figure 2 of Japanese Patent '280 that one would have understood that the component (chip) 1 was secured with an adhesive 8 onto a conductive pattern 6, 7 of a board 2. While the board is not a leadframe, the reference did suggest that one skilled in the art attaching a chip to another substrate where electrical connection was desired would have understood that an anaerobic adhesive would have been suitable for such an operation. The adhesive was stated to set (cure) in a few seconds in the operation at "normal temperature" (i.e. room temperature). The admitted prior art was that it was known to use a conductive heat curing adhesive like an epoxy for this operation. The admitted prior art also suggested that anaerobic adhesives were known to cure within the specified times required of the claim. Here, it certainly would have been within the purview of the ordinary artisan to employ the adhesives of Japanese Patent '280 to attach a chip to a substrate such as a leadframe with none but the expected success of increased productivity

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by increasing the speed with which the chip was able to be bonded to the leadframe. Note that 103 does not require absolute predictability but rather only a reasonable expectation of success is required under 35 USC 103 to establish a prima facie case. Additionally, while the reference did not express that the chip or the substrate were heated in the bonding operation, the reference suggested that the curing took place at "normal temperature" which appears to infer "room temperature". Additionally, the admitted prior art suggested that anaerobic adhesives cured at room temperature extremely quickly. One skilled in the art would have ascertained, therefore, that no heating was used in Japanese Patent '280 and that the same would not be necessary to bond the assembly "at normal temperature".

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

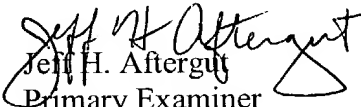
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
February 9, 2004